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faction to himself at that concrete moment,' as an insane man well might: hardly will Professor James call this concrete instance of trowing 'a true trowing.' Just why, therefore, his abstract definition of truth is so much more attractive to the 'pragmatic state of mind' than the innumerable concrete instances that obviously contradict it, can only be accounted for by the 'state of mind' itself. We can only infer that Professor James contends for his definition of truth, as he does in his 'Varieties of Religious Experience,' for all conditions of 'trance,' be they alcoholic, epileptic or 'religious'; that its authority is likely to be conceded only by those who have experienced the 'trance.'

No man who follows out the dictates of modern psychology to consistent inference of a physical world which satisfies all our percepts and concepts, will fall into the belief that 'ether is a noun for the verb to vibrate,' that the laws of physics are 'mere human inventions' and that science has 'broken down.' The man who from carelessness, or academic habit, starts from the Berkeleian anachronism and inconsistently conforms his inferences to it, is already far on the road to that belief. Yet back of both starting-points, temperament is apt to be a deciding factor in the making as well of a pragmatist as of a scientist. Education and circumstance may counteract it; they also may confirm it.

The respective temperaments of pragmatism and of science may very significantly be called the impatient and the patient.

To the impatient man the betterment of mankind by the toilsome researches of science, is too remote. To him the regeneration of human souls by a better system of education and by a better system of social and industrial economy, is too slow a method. He must have immediate evangelism. To him the conception that the value of life is in the living, is repulsive. That the joys of heaven are to be found in the direction traversed, he resents. He demands immediate translation. He frames his philosophy and his religion accordingly.

Nevertheless, the 'patient' interpretation of life, of science and of heaven has 'broken down' only for the impatient.

HERBERT NICHOLS.

CHESTNUT HILL, MASS.

REVIEWS AND ABSTRACTS OF LITERATURE

La misura in psicologia sperimentale. ANTONIO ALIOTTA. Firenze: Galetti & Cocci. 1905. Pp. 253.

This treatment of measurement in psychology is a work of criticism, and very acute criticism, written, however, by one who does not follow the analytical method so narrowly as to despise acquaintance with the detailed results of experiment. The book might, indeed, serve as a useful survey of the different ways in which measurement has been attempted in psychology, and of the results achieved. But its whole aim is critical.

The main thought of the author can be stated in brief compass. The data of psychology are solely the facts of internal experience, and these, taken simply as they are, without reading into them the results of analysis and hypothesis, are not quantitatively determined. One psychical fact differs from another in quality, and that is all. It is impossible to find in consciousness a system of quantitatively related data. Therefore measurement can not be applied in pure psychology, nor can laws of mathematical form have any direct validity there. Indirectly, such measurements and laws may be of service to psychology, but only as suggestive or as symbolic.

Quantity must be conceived as continuous and divisible; psychical facts are neither. To apply measurement to conscious phenomena, they must be conceived as different from what they appear, but so to conceive them is to destroy, not to explain them. "A psychical fact is as it presents itself in consciousness; if we conceive it otherwise, if we seek to represent it in some other manner, our conception applies perhaps to some other possible psychical fact, but has nothing to do with the fact under examination" (p. 58). This, a fundamental error of the psychophysicists, is unmasked in every disguise in which it has sought to commend itself. First Fechner, in order to get a measure of sensation, had to conceive the perceived difference of two sensations as itself a sensation; but introspectively 'the act of observing a difference between two sensations does not in the least consist in the representation of a sensation which is the difference of the first two' (p. 59). According to Wundt, next, psychophysics measures, not, indeed, sensations, but the perceptibility of sensations. But sensations are not present *to be* perceived, but only *as* perceived; nor is perceptibility a psychical fact—only actual perception is such. Or if, again, with Ebbinghaus and Meinong, we suppose psychophysics to measure the difference or similarity of sensations, we must, since the methods of psychophysics depend on the measurement of errors, conceive of error as being possible in judging differences of sensations, and thus conceive of the sensations as having an existence independent of our perception of them. As to Foucault's interpretation of psychophysics as measuring the clearness of sensations, it is simply not true that clearness, as a purely psychical condition, is so closely correlated with the accuracy of perception which the methods of psychophysics determine that the latter can be regarded as a measure of the former.

Most interesting, perhaps, is the author's criticism of the view of Stumpf that what is measured is the accuracy of sensory judgment. This is, indeed, measured, but it is distinctly not a psychical datum. Error of judgment is not pure psychical fact; the false judgment has the same psychical reality as any other state of mind. Error comes to light only when the psychical fact is compared with the physical fact judged, that is, when the psychical fact is examined, not for itself, but as a means to knowledge. What is measured is the difference between the unaided subjective estimate of a physical fact and some more exact determination of this fact. It is always a physical measurement. A science treating of the accuracy of judgment is thus not psychology, but gnoseology.

The fundamental assumption of psychophysics, namely, that sensations are more or less intense, is itself false. They have, no doubt, a certain intensive quality, as they have a certain extensive quality or 'extensity,' and this intensive quality comes into play in the perception of the intensity of physical processes. But it is nearly as naïve to infer thence that sensations possess intensity, as it would be to argue from the fact of space-perception that sensations have extent. Psychophysics, as a branch of gnoseology, determines the accuracy of our perceptions of intensity; as a branch of psychology, it should set itself to the task of contributing to the analysis of the process of intensity-perception, in which field there are real problems analogous to the moot questions of space-perception and of time-perception.

This section on psychophysics is the longest and most brilliant part of the work. The rest of the book treats in turn of 'psychochronometry,' 'psychodynamics,' and 'psychostatistics,' the latter section being quite brief and inadequate in comparison with the rest.

Under the head of psychochronometry are discussed the measures of simple and complex reaction times. Severe strictures are passed on the elimination method, by which the duration of the processes of perception, discrimination and association is supposed to be measured. The mental process in these higher acts is not really compounded of the simple reaction plus something; the whole process is different, the constituent parts are modified by their union, and their duration is therefore not reliably determined by the method of elimination. Moreover, most experimenters have not bothered themselves to ascertain empirically, by introspective observation during the experiments, exactly what mental processes were being timed. The mental process was simply schemed out beforehand. Psychical facts can, of course, theoretically, and sometimes practically, be measured as to their duration, but as this is the only measurement of which they admit, quantitative laws can not be founded on it; for such laws require the measurement of at least two related quantities.

Under the head of psychodynamics are treated, first, the attempts to measure mental energy in terms of its muscular effects. Lehmann's mental energy turns out to be either physical or else a nondescript; it is not a psychical quantity. Measures of the force or quantity of memory are likewise not psychical measures. The consciousness of six nonsense syllables is not twice as big a consciousness as the consciousness of three; it is simply a different consciousness. And the ability to reproduce the syllables at will is not a psychical fact, nor is the degree of retention a psychical magnitude. Measures of attention, in terms of distraction or otherwise, are not measures of the psychical fact of clearness; and measures of the range of consciousness are merely determinations of the number of objects of a particular sort which can be grasped as a unitary group. Measures of mental work and fatigue are measures of the physical effects of mental action. Mental tests do not reveal quantitative differences in the mental states of individuals: the mental differences are qualitative, the quantities are physical. In general, functions are not introspectively observable, and are not psychical facts; and the measurement of their efficiency is not a psychological measure.

The author's criticism is carried much more into details than is indicated by the foregoing summary. There is much in the book that is not strictly new. New is, perhaps, the thoroughness with which the range of psychological measurements is examined from the introspectionist's point of view, and new also the clearness with which the criticism is presented. The book makes good reading. There are a few apparent errors in citations of facts, a few inaccurate references to publications, a goodly sprinkling of typographical errors, and an evident disposition on the part of the author to favor the simplification of English spelling, as witness 'Kirkpatrik,' 'Mak-Kendrik,' 'Cattel' regularly, with 'Kattel' as a variant.

Two main objections to the thought of the book occur to the reviewer. First, something too much is made of the heterogeneousness and discontinuity of conscious facts, and of the consequent inapplicability of measurement to them. Were there no homogeneity, no chance for classification, there could be no descriptive psychology. Mental facts do show degrees of likeness and difference, and can sometimes be arranged in ordered series. A set of twenty color tones can easily be arranged by an untutored person in order of likeness, and gaps in the series can be observed. This is an ordering of sensory qualities, and involves something very like a rudimentary measurement. Similar arrangements can be made on the basis of intensity or of esthetic effect. Psychical facts are thus seen to be related in definite ways, some of which form the basis of measurement; though it is no doubt true that the problem of measurement does not clearly arise within the psychical sphere taken alone, and that the fully developed concept of measurement can not be transferred to that sphere without doing it violence.

Objection should also be raised to the loophole which the author allows for measurement in psychology. He does not seem willing to follow his logic to the bitter end, and so exclude quantitative work altogether from a share in the furtherance of what he defines as psychology proper, the 'morphology of consciousness.' It may be that consideration of the present state of the science bluffs down his logic, and that, just as history disposes of the Kantian query whether psychology can become an experimental science by showing that it has become one, so the applicability of quantitative methods could not well be denied in the face of the wide application that is made of them. Are all these measurements valueless? No, answers the author; though psychical phenomena are measured in none of them, yet indirectly they fix the mental facts through the medium of related physical facts, and add precision to the results of introspection. Thus does the author, after standing so valiantly against it, fall captive at last to the psychologist's fallacy. Psychical facts are such only as they are revealed in inner experience; to infer them from the results of physical measurement is false logic, and any precision gained in thus supplementing the results of introspection is factitious. The example of brightness contrast, adduced by the author in this connection, is far from convincing. Measurements of the contrast effect do not contribute in the least towards a description of consciousness, but merely state more precisely the relation between the contrast effect and its physical conditions. What quantitative psychology is concerned with is, indeed, not the description of consciousness, but something which is probably of much more importance, namely, the causal relations subsisting between mental events and their physical conditions and consequences. Cause and effect are on the whole a more important study than morphology; and so far from the use of quantitative psychology being the furtherance of the description of consciousness, it will probably in time be recognized that the main value of descriptive psychology lies in its contribution toward the discovery of causal laws which overpass the bounds of the psychical. This is not psychology, will be the retort. But psychology, after all, is what we make it.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

L'Attention spontanée dans la vie ordinaire et ses applications pratiques. ROERICH. *Revue Philosophique,* August, 1906. Pp. 136–159.

With the following statement giving the limitations of his discussion, M. Roerich begins his subject: "Spontaneous or primary attention is distinguished from voluntary attention in this, that while in the former the subject becomes attentive through the force of an impression or the suggestion of an idea from without, in the latter the subject becomes attentive through a process of conscious initiative and contingent choice" (p. 136). There are two aspects in this kind of attention, which may be called the primary and the apperceptive. "Primary attention is the effort by which we try to know more fully a fact or an object which vividly impresses our sense-organs, to satisfy ourselves with those aspects of the situation which have stimulated the organism" (p. 136). This is well illustrated by our reactions to a cannon shot, a light, a blow, sufficiently strong to rouse us from a state of indifference. In a similar manner a very weak sound, an indistinct light, a sigh, may excite our attention. As the author insists, primary attention is usually mixed with other forms of attention, and any treatment of it as such must be, therefore, a logical one.

In a number of interesting examples M. Roerich shows the function of primary attention in practical life. I shall give only one. Suppose a man, lost in a deserted field, to see a light in the distance. What can it be? He proceeds to investigate and pass judgment just as does a scien-